

Supplemental Material:

**Assessing the Impacts of Traffic-Related and Woodsmoke Particulate Matter
on Subclinical Measures of Cardiovascular Health: A HEPA Filter Intervention
Study**

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Methods

TRAP and WS Region Selection in Greater Vancouver

To accurately categorize postal codes into either high TRAP/low WS or low TRAP/high WS, we used previously developed spatial models of TRAP and WS. Henderson et al. (2007) used measurements of NO_x and absorbance at 116 and 25 locations, respectively, in two seasons to develop TRAP land use regression models for Metro Vancouver (Figures S1a, S1b). Larson et al. (2007) developed a spatial model based on mobile nephelometer monitoring on relatively cold, calm winter evenings (Figure S1c).

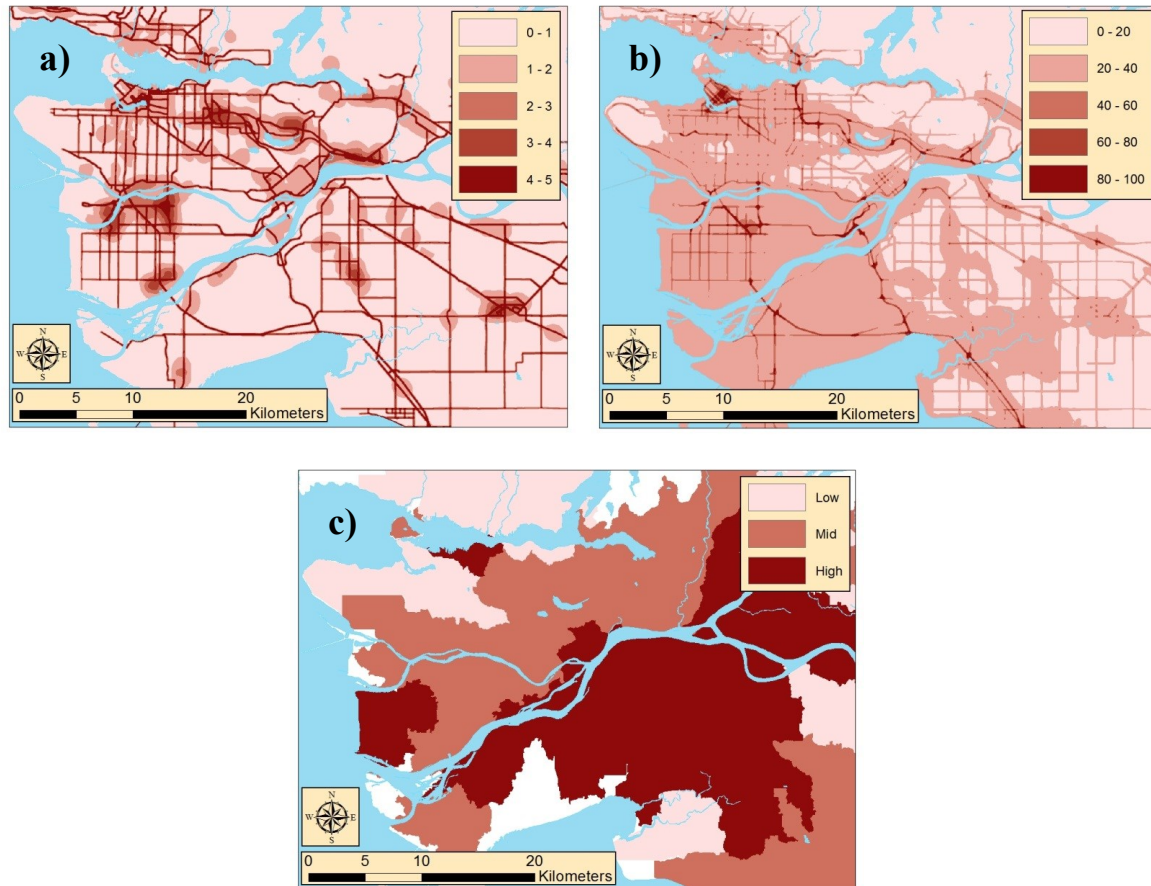


Figure S1. Modeled spatial patterns of a) absorbance ($\times 10^{-5} \text{ m}^{-1}$) b) nitric oxide (ppb) and c) woodsmoke (tertiles).

Participant Recruitment and Home Categorization Verification

Invitation letters with study and contact information were mailed to the identified TRAP- and WS-exposed postal codes. Potential participants were interviewed by phone and were recruited if they met our inclusion criteria. Informed consent was obtained from each participant before data collection. A \$250 honorarium was offered to each of the participant who completed the study. At the end of the study, all exposure and outcome results were mailed to the participants.

We verified the home categorization into TRAP- and WS-exposed regions using ArcGIS Desktop 10 (ESRI, Redlands, CA: Environmental Systems Research Institute) and layers provided by DMTI Spatial Inc. (Markham, Ontario, Canada). The distance of each individual home to major roads or highways and highway or major road length at varying buffers was calculated as a measure of exposure to TRAP.

Optical Reflectance and Absorbance

Optical reflectance values were converted to absorbance using the following formula (American National Standards Institution 1993):

$$\alpha = [A/2V] \cdot \ln[R_f/R_s]$$

where α is absorbance in 10^{-5} m^{-1} , A is area of the filter in m^2 , V is volume sampled in m^3 , R_f is average reflectance of field blank filters, and R_s is reflectance of the sample filter as a percentage of 100.0.

Data Exclusions

Participants with incomplete or poor quality data for one or both of the sessions were excluded from final analysis. $\text{PM}_{2.5}$ sampling data were reviewed to ensure appropriate sampling times and flow rates for the duration of the study. As with the

exposure data, any health variable with incomplete information for either or both sessions was excluded for that particular analysis.

Included and excluded participants were generally similar (Table S1).

Table S1: Comparison Between Included and Excluded Participant Characteristics

Variable	Included Participants (mean ± SD) N = 68	Excluded Participants (mean ± SD) N = 15	t Test P- Value
Age (yrs)	43.8 ± 12.8	42.1 ± 8.5	0.47
% Female	53%	50%	
BMI (kg/m ²)	24.9 ± 4.0	23.4 ± 3.4	0.06
Baseline Systolic BP (mmHg)	119.8 ± 13.3	117.0 ± 14.9	0.46
Diastolic BP (mmHg)	75.6 ± 10.5	76.0 ± 10.1	0.81
% Time Open Windows	36.6 ± 39.4	24.7 ± 40.3	0.13
% Time at Home	74.4 ± 13.3	69.4 ± 18.1	0.07

Mixed Effects Models

The general mixed model for measurement i on participant j living in home k was:

$$\log Y_{ijk} = \alpha_j + \gamma_k + \beta_0 + \beta_1 \text{Exposure}_{ijk} + \beta_2 \text{Ind.Temp}_{ijk} + e_{ijk}$$

where α_j and γ_k are random participant- and home-specific intercepts, respectively, and β_1 represents the fixed effect of HEPA filtration (binary) or exposure (continuous) on the log-transformed outcome variable, $\log Y_{ijk}$.

REFERENCES

American National Standards Institution. 1993. *ISO 9835:1993, Ambient air - Determination of a black smoke index*. Multiple. Distributed through American National Standards Institute, Washington, D.C.